WAMC Lab Template

Math Concept(s): Solving Problems with Linear Equations

Source / Text: Mathematics: A Contextual Approach to Algebra 1

Developed by: Lyle Prouse E-Mail: prouse@skschools.org Date: 06/21/22

Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

Lab Plan

Lab Title: Measuring in Inches and Centimeters

Prerequisite skills: Find the slope of a line, graphing

Lab objective: Take measurements in inches and centimeters and graph the results to show the relationship that converts inches to centimeters

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*

Mathematics K–12 Learning Standards:

- CCSS.Math.Content.5.MD

Standards for Mathematical Practice:

- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

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K-12 Science Standards

- MS.PS3-1 Construct and interpret graphical displays of data to identify linear and non-linear relationships.

Technology

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Engineering

- Analyzing and interpreting data.

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

☐ Global Awareness ☐ Financial/Economic/Business/Entrepreneurial Literacy ☐ Civic Literacy
☐ Health/Safety Literacy ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION
Creativity and Innovation
☐ Think Creatively
☒ Work Creatively with Others
☐ Implement Innovations
Critical Thinking and Problem Solving
☐ Reason Effectively
☐ Use Systems Thinking
☐ Make Judgments and Decisions
☒ Solve Problems

INFORMATION, MEDIA & TECHNOLOGY SKILLS
Information Literacy
☐ Access and Evaluate Information
☒ Use and manage Information
Media Literacy
☐ Analyze Media
☐ Create Media Products
Information, Communications and Technology (ICT Literacy)

LIFE & CAREER SKILLS
Flexibility and Adaptability
☐ Adapt to Change
☐ Be Flexible
Initiative and Self-Direction
☒ Manage Goals and Time
☐ Work Independently
☐ Be Self-Directed Learners
Social and Cross-Cultural
☒ Interact Effectively with Others

Productivity and Accountability
☐ Manage Projects
☒ Produce Results
Leadership and Responsibility
☐ Guide and Lead Others
☐ Be Responsible to Others

Communication and Collaboration	☐ Apply Technology Effectively	☒ Work Effectively in Diverse Teams
☐ Communicate Clearly		
☒ Collaborate with Others		

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Tape measures, calculators, graph paper

Set-Up Required:

- Have tape measures and graph paper staged at the front of the classroom.

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

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Cooperative Learning:

- Students will work in teams of two to measure objects in the classroom, collect the data, and graph the data.

Expectations:

- Students will be able to find the slope of the line they have plotted from their measurements and will see the relationship that converts measurements in inches to centimeters is: (length in cm) = 2.54 x (length in inches).

Timeline:

- The lab will take one 50 minute period

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Converting measurements from metric to English.

Career Applications

- Construction trades

Optional or Extension Activities

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WAMC Lesson Plan

Name(s): Lyle Prouse
Email Address:prouse@skschools.org
Lesson Title: Slope of Line
Date: 6/21/22
Text: STEM Correlation: Math Lesson Length: 50 minutes

Big Idea (Cluster): Slope is the rate of change between any two points on a line	
Mathematics K–12 Learning Standards: CCSS.8.F	
Mathematical Practice(s): Use functions to model relationships between quantities	
Content Objectives Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values	Language Objectives (ELL):
Vocabulary: Slope, rise, run, rate of change	Connections to Prior Learning: Adding and subtracting integers.
What is the slope of a line? What is the meaning of slope?	Common Misconceptions: Interchanging the points of the coordinates when using the slope formula. •

Assessment (Formative and Summative):

- Formative: Check students for understanding. Summative: Unit Quiz

Materials:

- Paper, pencils, calculator, work sheets on bigideasmath.com

Instruction Plan:

Introduction: Slope is the rate of change between any two points on a line. It is the measure of the steepness of the line
Explore: Have students using line graphs and picking points to ascertain the slope
When I observe students: The are able to calculate the slope by picking points from a graph
Questions to Develop Mathematical Thinking as you observe: What is the slope of the line?
Answers: positive, negative, zero, undefined
Summarize: At the end of this lesson students will be able to find the slope of a line on a graph

Career Application(s):

- Finance, science and math, construction

Leadership/21st Century Skills:

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21st Century Skills (Check those that students will demonstrate in the above activity.)

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